REMARKS

Reconsideration of this application is respectfully requested.

Claims 1, 8-15, 19, 20, 22-68 and 73-80 remain in the application. Claims 1, 15, 29, 43, and 57-68 have been amended. The amendments are directly merely to matters of form and do not raise new issues that would require further consideration or searching by the Examiner. Accordingly, entry of this amendment after allowance is believe to be proper and is requested.

Applicant would like to thank Examiner Tran for the courtesies extended in the Interview conducted on December 17, 2009 with Applicant's attorney.

Claims 1, 8-15, 19, 20, 22-68 and 73-82 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. More specifically, the Examiner asserted "The independent claim states method steps such as "repeated discharge operation," "determining," "pushing," and "setting." However this is not sufficient to tie the process claim to a particular apparatus in another statutory class. To qualify as a statutory process, the claim should positively recite the other statutory class to which it is tied, for example by identifying the apparatus that accomplished the method steps (In re Bilski, 545 F.3d 943,88 USPQ2d 1385 (Fed. Cir. 2008)).

Independent method claims 1, 15, 29 and 43 have been amended to recited "A computer implemented method" and various steps have been amended to recite that the steps are being performed by a computer, in accordance with the Examiner's helpful suggestion. Independent device claims 57, 61 and 65 have been amended to recited "A computer device" and various units have been amended to recite that the units are part of a computer, in accordance with the Examiner's helpful suggestion. It is respectfully

submitted the amendments to claims 1, 15 29, 43, 57, 61 and 65 overcome the rejection under 35 U.S.C. 101 and the rejection should be withdrawn.

Claims 1, 8-15, 19, 20, 22-68 and 73-82 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner pointed out on pages 3-4 of the Office Action several instances where the claims where unclear or lack proper antecedent basis.

Independent claims 1, 15, 29, 43, 57, 61 and 65 have been amended to overcome the rejection under 35 U.S.C. 112, second paragraph. Additionally, the Applicant would like to point out that the present invention deals with a computer implemented method for optimizing the order of assignment of a number of suppliers to a number of demanders. The network that is built in the method is not a physical network but a numerical network for representing the distribution problem to be solved. Although the underlying problem can be related to a physical network there are many problems which do not relate to physical networks, for example the distribution of securities over credits. In the latter case, there is no physical network which would be represented by the numerical network. In the numerical network, the securities would be represented by the suppliers and the credits would be represented by the demanders. Hence, the discharge operation and the pushing action are not physical operations but numerical operations which are defined in the description (for example in the paragraphs 292 to 336 of the application as published US 2005/0273341). The same is true for determining the excess flow which is described in paragraph 229. Moreover, determining a min-s-t-cut value is also a numerical operation, which is described in the paragraphs 212 to 222. In light of the amendments to

claims 1, 15, 29, 43, 57, 61 and 65 and the above-presented remarks, it is respectfully submitted the rejection under 35 U.S.C. 112, second paragraph, should be withdrawn.

During the Interview of December 17, 2009, the Examiner pointed out that each independent claim recited the following limitation in one form or another "deriving by the computer, the optimized order of assignment from the optimized network flow distribution by assigning the supply vertices to the demander vertices in correspondence to the flow values of the connecting edges"; however, the Examiner indicated such language seemed unclear and requested reference to the specification for guidance.

Applicants respectfully submit that the network is optimized if the amount of flow that reaches the sink corresponds to the value ascertained by the min s-t-cut as stated in paragraph 135 of the application. The corresponding conditions are defined in paragraphs 136 to 139, wherein the conditions for terminating the method are described in paragraphs 238 and 240 of the application document. Furthermore, an exemplary optimal order computation is described in paragraph 143 with respect to the running example of demanders and supplies of capital flow.

Claims 1, 8-15, 19, 20, 22-68 and 73-80 were rejected under 35 USC 103(a) as being unpatentable over Ahuja et al., Network Flows, in view of Bertsekas et al., Finding Maximal Benefit/Maximal Cardinality Assignments" in further view of Kalagnanam, US Patent No. 6,044,361, as set forth on pages 4-18 of the Office Action dated October 6, 2009.

The Examiner states that Ahuja does not specifically teach the applicant's manner of solving the network flow problem. The Examiner then states that Kalagnanam would teach a system to solve a network flow bipartite matching problem. It is respectfully

submitted that Kalagnanam does not teach determining an optimized network flow distribution of flow values through the edges by an iterative flow method as recited in the various independent claims of the present application.

Kalagnanam discloses a method for finding a near optimal inventory matching rather then a method for optimizing the order of assignment of a number of supplies to a number of demands. The method described by Kalagnanam is an iterative method one iteration step of which is the determination of the maximum flow from a source to a sink in a network. The maximum flow is then evaluated by a multi key filter and the result of the evaluation is fed back to the beginning of the method so that a further iteration step can be started (compare Figure 5 of Kalagnanam). In each iteration step, the maximum flow algorithm is used. However, the maximum flow algorithm itself is not iterative. As far as an iteration is mentioned in the abstract (compare arguments of the Examiner on page 6 of the Office Action) this iteration relates to determining the weights for the edges of the bipartite graph (compare col. 9, line 55 to col. 10, line 38, i.e. the section titled "iterative bipartite matching"). As can be seen from the section beginning on page 10, lines 39 "max flow analysis" the maximum flow analysis begins after the weights have been iteratively determined. Therefore, Kalagnanam et al. do not describe an iterative maximum flow analysis as the Examiner asserted but a non iterative flow analysis based on a bipartite graph with weights of the edges which have been determined iteratively.

Moreover, Applicant respectfully disagrees with the statement of the Examiner on page 7 of the Office Action that steps c) and d) would be disclosed by Kalagnanam in col. 12, lines 1 to 10. The cited section of Kalagnanam describes using a

solution of the maximum flow analysis after evaluation by a multi key filter followed by a back lifting (compare numbers 501, 502 and 503 in Figure 5) for running the iterative bipartite matching step 501 again.

In contrary thereto, the inventive flow method of the present application comprises a repeated discharge operation in which flow is pushed from demander vertices to supply vertices followed by a repeated discharge operation in which flow is pushed from some of the supply vertices back to demander vertices. These discharge operations are defined in steps a) to d). The steps a) to d) are iterated according to step e). However, all these iterations are performed with in one and the same flow method. When the flow method is terminated, the received result will not to be fed back to the flow method for performing an iteration as it is done by Kalagnanam et al. Hence, the inventive method differs strongly from the method described by Kalagnanam. Moreover, it is submitted that section 12.3 of Ahuja does not disclose the rules mentioned on page 8 of the Office Action. For example, Applicant can not see where Ahuja discloses that "a flow on an edge leaving a demander vertex that has no other edge leaving this demander vertex and leading to another supply vertex is never pushed back" since Ahuja does not even describe pushing back any flow. The Examiner refers to section 12.3 rather generally without giving any indication where the features in question are disclosed in this section.

In addition, as already pointed with respect to the previous office action, Ahuja does not describe a method for optimizing the order of assignment of a number of supplies to a number of demands, i.e. a method to provide an optimum distribution of resources to demanders. Instead Ahuja describes a matching problem. The difference is that in a matching problem a number of items or persons, like pilots, have to be matched

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with a number of demands, like airplanes. The aim of the method descried in Ahuja is to find an optimum assignment of, for example, pilots to airplanes. This means that each single supply, i.e. each single pilot, can only be assigned to a single demand, i.e. to a single airplane. In the distribution problem solved by the present invention, however, each supply can be distributed over more than one demander. For example, consider a children's birthday party with apple pie, pear tart and chocolate cake as supplies and child 1, child 2, child 3 and child 4 as demanders. The problem to be solved by the inventive method is a distribution problem, i.e. a problem, the solution of which indicates how much of the apple pie is to be assigned to child 1, how much of the apple pie is to assigned to child 2, etc., how much of the pear tart is to be assigned to child 1, how much of the pear tart is to be assigned to child 2, etc., and how much of the chocolate cake is to be assigned to child 1, how much of the chocolate cake is to be assigned to child 2, etc. This problem is not trivial if one considers that, for example, the chocolate cake is the most popular and every child wants to get as much chocolate cake as possible while, on the other hand, only three of four children want to have apple-pie and child 2 prefers apple pie over pear tart. The method of Ahuja et al. would only give a solution like giving child 1 the apple pie, giving child 3 the pear tart and giving child 4 the chocolate cake and giving nothing at all to child 2 since there are only three supplies which can be matched to the children. This solution will obviously be very unpopular among the children of the birthday party. The distribution problem is also described in the present application in paragraphs 3 to 11 with respect to balancing loan accounts with collateral securities. However, for matching pilots to airplanes, the method of Ahuja would lead to reasonable results since one can not match pilot 1 at the same time with airplane 1, airplane 3 and airplane 5.

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Hence, it is respectfully submitted that there is a considerable difference between the method described by Ahuja and the inventive method.

To summarize, the present invention differs from Kalagnanam et al. in that the present application claims an iterative flow method in which the result of the flow method is based on a number of iterations while the method disclosed by Kalagnanam describes an iterative method which comprises a step of max flow analysis where the result of the max flow analysis is evaluated and fed back to the beginning of the method so that the new max flow analysis is performed. Hence, Kalagnanam et al. does not describe an iterative max flow analysis but an iterative method which in each iteration step a result of a non iterative max flow analysis is determined. Moreover, contrary to the Examiners statement, it is submitted that Ahuja does not teach a method of optimizing the order of assignment of a number of supplies to a number of demanders. Furthermore, Ahuja does not disclose the rules which are mentioned on page 8 of the Office Action as asserted by the Examiner.

In response to the previous Office Action of February 9, 2009, independent claim 1 was amended to include steps a) through e). Independent claims 15, 29, 43, 57, 61 and 65 were also amended, in one form or another, to include similar limitations to that of claim 1. It is respectfully submitted none of the references cited in the Office Action disclosed a method containing the steps a) to e). Therefore, since none of the cited references disclose the features a) to e), it is respectfully submitted amended claim 1, along with its dependent claims, is patentable distinct and not rendered obvious by Ahuja et al., Bertsekas et al. and Kalagnanam et al. alone or in any combination and is in condition for allowance. Additionally, for at least the reasons put forth above, it is

respectfully submitted independent claims 15, 29, 43, 57, 61 and 65, along with their dependent claims, are patentable distinct and not rendered obvious by Ahuja et al., Bertsekas et al. and Kalagnanam et al. alone or in any combination and is in condition for allowance.

In view of the preceding amendments and remarks, it is submitted that the claims remaining in the application are directed to patentable subject matter and allowance is solicited. The Examiner is urged to contact applicants' attorney at the number below to expedite the prosecution of this application.

Respectfully submitted,

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